Space Weather Forecast

Issued on Saturday, 26 March 2022 at 01:00 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of G1/Minor Storm intervals days 1-3, including potential CME arrival.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate over the last 24 hours with one Moderate-class flare from a small sunspot in the southeast. Despite this flare, this was the smallest of the three numbered regions on the disk, with the other two forming a large complex region in the northeast. The Moderate flare also produced a coronal mass ejection (CME) which has been analysed as potentially having an Earth-directed component, likely glancing Earth shortly before midnight on the 27th, but with 10 hours uncertainty.

Solar Wind / Geomagnetic Activity: The solar wind is declining as the effects of a coronal hole wane, falling to near 400km/s. The magnetic field carried the wind was weak, and whilst the north-south component (Bz) was mainly in the southward direction, this was also weak. Consequently geomagnetic activity has remained Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Current Moderate activity is expected to fall to Low to Very Low, but with a slight chance (15%) of persisting at Moderate with further Moderate-flares possible

Solar Wind / Geomagnetic Activity: CME arrival is expected 28/0000 +/- 12 hours, likely with a glancing impact, although some uncertainty. Otherwise faster solar wind from a coronal hole is expected to enhance solar winds across Earth later day 1 (26th), and through day 2 (27th), with solar winds then likely remaining enhanced into day 3 (28th) due to the anticipated CME. Solar winds easing again day 4 (29th). Quiet, isolated Unsettled geomagnetic activity will become Active with a chance of G1/Minor Storm intervals from the arrival of CH69 later day 1 (26th) and into day 2 (27th), and then again later day 2 and into day 3 (28th) from CME arrival. Activity likely easing to Quiet to Unsettled day 4 (29th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background with no solar radiation storms occurring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	40	40	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	15	15	15	15
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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